Climate Literacy

Short-Term Project

Choosing a Project The section below is an exercise to help you think through your project choice.	**What is the problem, question or challenge?** How can each of us slow or stop global warming and climate change? There is an environmental crisis occurring at this time because of global warming and climate change. Humans are the cause of it; therefore, humans need to solve it. Each of us can make a difference. The challenge is, how? What is that going to look like for each student? The frontloading will focus on the causes and impacts of global warming, and then students will work on ways they can make a difference.
You just need brief answers for the questions. **More extensive planning will happen after you have established if this is a good topic for the project.**	**The project should be open-ended with a clear path forward. Is there one obvious path to conduct the project? Why, or why not?** There are several clear paths forward, making this project open-ended.
	What is the overarching theme? The science, ethics, and solutions for global warming & climate change, and what can be done to combat it. **What tasks can be woven into the project?** Writing, reading, researching, public speaking, lab work, analyzing data, and developing a working model. **What academic disciplines can be woven into the project?** Science, language arts, art, civics, literature, history
	How is the project focus thought-provoking and meaningful? Exploring ways students can do their part to slow global warming & climate change is both meaningful and empowering. The project will also examine ethical issues with respect to global warming and its solutions. The project will conclude with students developing an action plan detailing what they can do to help.
	What are the real-world applications? Climate change is an environmental crisis affecting every living being on Earth. The real-world applications are extensive.
	What grades would this project be a good fit for? 4 - 8
	Provide a short list of: **Resources**: *The Science of Climate Change: A Hands-On Course*, *The Boy Who Harnessed the Wind*, Drawdown (website), Climate Reality or 350.org, mentors and experts from the community

Materials: Lab supplies from course, Computers, Art supplies, the rest to be determined after more project development occurs

Information: Need grade-appropriate information about global warming, climate change, and appropriate solutions.

Activities: Experiments, Scientific Modeling, Non-fiction writing & reading.
Other possibilities: Talks in the area? Marches? Volunteer? Create a YouTube Video?

Academic Disciplines and Vocational & Academic Skills				
Environmental Science	**Language Arts**	**Art**	**Civics**	**History**
Experiments	Reading: Fiction & Non-fiction	Activist Art: Work on a piece of original art to educate about the climate crisis	The Paris Accord	Industrial Revolution to today
Modeling	Non-fiction writing		Subsidies	The Environmental movement in history
Engineering Solutions	Poetry (maybe)		Taxing Carbon	
Climate Change	Vocabulary		Solar & Wind Legislation	
Global Warming	Public Speaking			
Greenhouse Effect				
Carbon Footprint				
Extinction				
Relevant environmental chemistry				

Project Outline

Challenge: Develop an Action Plan for How You Can Minimize Your Contribution to Global Warming & Climate Change

I. Frontloading the Science by Week
a. Week 1: The Greenhouse Effect
b. Week 2: The Link between the Greenhouse Effect & Global Warming
c. Week 3: How Global Warming Is Causing Climate Change
d. Week 4: Develop Your Climate Action Plan

II. Throughout the first three weeks of the project, students will begin to develop an idea about what they can do to make a difference. There are many possibilities for what actions students can take.

Organizing for Multiple Students

Much of the project can be done in teams or groups, or the entire project can be done with one student.

Individual Work

Each student will read articles and *The Boy Who Harnessed the Wind*. Students will demonstrate an understanding of the climate crisis through lab work, discussion, art, and/or essays. Each will participate in a presentation either individually or in a small group. Each student will develop an individual action plan and conduct a self-assessment.

Small Groups

Students can work together on the labs and grass roots activism (if they do this as a part of the project) either in small groups or as the entire group, depending on the size of the group.

The Entire Group

Field trips, discussions, host presentation, and group assessments.

The Hook

The hook for this project should be chosen to catch your students' attention. If possible, attend a march or rally. If you happen to live in Hawaii, see if you can schedule a visit to the Mauna Loa Observatory, where much of this data is being collected. Other good hooks are a talk from a local environmental group, like 350.org or Climate Reality, a documentary, or a field trip to an area that is being affected by climate change. Try to choose something that includes some hope and optimism in addition to information about the climate crisis. I find that too often this topic is treated as if nothing can be done. The problem with that attitude is that if nothing can be done, then students wonder why they should do anything, which goes against the entire point of doing this project.

Project Schedule

Optional: Before the project starts, contact 350.org, Climate Reality, or another environmental group in your area who focuses on this issue and ask if you can attend their monthly meeting. Put that date and time in the project schedule. There are several suggested field trips. If these do not work for you, find what is close and/or of more interest to students and go there instead.

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Week 1	The Hook followed by a discussion if there is time. Assign *The Boy Who Harnessed the Wind* to be read over 2 weeks.	Read, discuss, and conduct all experiments and activities on pages 8-24 of *The Science of Climate Change: A Hands-On Course.*	If possible, visit a greenhouse.	Research how atmospheres of Mars, Earth, and Venus affects surface temperatures of each planet. Present the results of this research visually or in writing.	Investigate what others are doing to combat climate change. Discuss the quality of sources. Have students present, through discussion, those actions they feel are having the most and least impact. Include the court case from the US: Juliana V. United States also called Youth V Gov.
Week 2	Read, discuss, and conduct all experiments and activities on pages 25-42 of *The Science of Climate Change: A Hands-On Course.*	Through documentaries, internet, and books research and learn about the history of the Industrial Revolution.	Allow two days to write a well-edited five-paragraph essay, poem, or work of fiction that focuses on the achievements, benefits, and consequences of the Industrial Revolution.		Visit to a car dealership whose manufacturer has electrical and gas fueled car models. Call ahead of time so that you can get a tour from someone who understands the technology of how the electrical car works.

Week 3	Read, discuss, and conduct all experiments and activities on pages 43-58 of *The Science of Climate Change: A Hands-On Course.*	Discuss *The Boy Who Harnessed the Wind*. Watch the documentary and/or the film based on the book. Give students the option of working on their own unique engineering project addressing a solution for the climate crisis, recreating the solution in the book by building a prototype of a windmill, or writing a research paper about wind power.		Research activist art and/or public speaking. Today and tomorrow, create a poster, social media campaign (i.e. graphic design), speech, or a YouTube video educating others about the climate crisis.	In addition to working on their activist art, have kids write letters to their congresspeople, senators, and/or the President about their feelings on this issue.
Week 4	Read, discuss, and conduct all experiments and activities on pages 59-68 of *The Science of Climate Change: A Hands-On Course.*	Research and learn about the legislation: The Paris Accord, subsidies, carbon taxes, Solar and Wind Legislation, and the climate action plan of your city, town, and state.	Personal Plan: Have students go to the website Drawdown and use the information here and in the book, *The Science of Climate Change,* to develop a plan for shrinking their carbon footprint. Discuss and plan other ways they can take personal action to make a difference. Put together their presentations.		Presentation of climate action plans, group plans, activist art, YouTube Videos, and engineering projects.